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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/539,357	03/31/2000	Eric D. Brill	MS1-471US	1285

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LEE & HAYES PLLC  
421 W RIVERSIDE AVENUE SUITE 500  
SPOKANE, WA 99201

EXAMINER

NGUYEN, DANG T

ART UNIT	PAPER NUMBER
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2178

DATE MAILED: 09/26/2003

4

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/539,357

Applicant(s)

BRILL ET AL.

Examiner

Dang T Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 31 March 2000.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-57 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-57 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 March 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_ 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

1. This action is responsive to communications: Application filed on 03/31/2000.
2. Claims 1 - 57, are pending in this case. Claims 1, 10, 17, 23, 30, 35, 40, 49, 54 are independent claims.
3. Claims 45, 49, and 51 objected to because of the following informalities: can not include "number" embedded within a claim. Appropriate correction is required.

### ***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

~~1-34, 40-57~~

**Claims ~~1-5~~ are rejected under 35 U.S.C. 102(b) as being anticipated by Church,**

**U.S. patent No. 5,572,423 – filed Jan. 23 1995.**

**Regarding independent claim 1**, Figure 1 of Church discloses a method comprising: receiving an entered string (see column 4 line 67 "acress"); and determining how likely a word (see column 5 line 1 "actress") was to have been entered as the string based on at least one edit operation {Pr(acress/actress)=del[c,t]/chars[c,t]} that converts a first character sequence of arbitrary length [actress = 7] in the word to a second character sequence [acress = 6] of arbitrary length in the string (see column 5 line 12).

**Regarding dependent claim 2**, Figure 1 of Church further discloses the first character sequence has a first length [actress = 7] and the second character sequence has a second length [acress = 6] that is different than the first length [6 different with 7].

**Regarding dependent claim 3**, Figure 1 of Church discloses the first character sequence has multiple characters [actress = 7] and the second character sequence has multiple characters [acress = 6].

**Regarding dependent claim 4**, Figure 1 of Church further discloses the first character sequence has a first number of multiple characters [actress = 7 characters] and the second character sequence has a second number of multiple characters [acress = 6 characters] that is different from the first number of multiple characters.

**Regarding dependent claim 5**, Figure 1 of Church discloses further comprising determining how likely the word is to have been generated (see column 3 lines 47-53).

**Regarding dependent claim 6**, Church discloses further comprising conditioning the edit operation on a position that the edit occurs at within the word (see column 5 lines 12-13 [delete t after c in the word "actress" to match the word "acress"]).

**Regarding dependent claim 7**, Figure 1 (step 11) of Church discloses further comprising identifying the string as potentially incorrect.

**Regarding dependent claim 8**, Figure 1 (step 16) of Church discloses further comprising correcting the string to the word.

**Regarding dependent claim 9**, Church discloses a computer readable medium having computer-executable instructions that, when executed on a processor, perform the method as recited in claim 1 (see column 6 lines 1-6).

**Regarding independent claim 10**, Church discloses a method comprising: receiving an entered strings [acress]; and determining a probability  $P(s \setminus w)$  (see column 5 line 12) expressing how likely a word  $w$  was to have been incorrectly entered as the string  $s$  based on one or more edit operations that convert first arbitrary-length character sequences [acress = 7] in the word  $w$  to corresponding second arbitrary-length character sequences [acress = 6] in the string  $s$ , wherein:  $P(s \setminus w) = P(\text{acress}/\text{actress})$ .

**Regarding dependent claim 11**, the claim incorporates substantially similar subject matter as claim 2, and is rejected along the same rationale.

**Regarding dependent claim 12**, the claim incorporates substantially similar subject matter as claim 5, and is rejected along the same rationale.

**Regarding dependent claim 13**, the claim incorporates substantially similar subject matter as claim 6, and is rejected along the same rationale.

**Regarding dependent claim 14**, the claim incorporates substantially similar subject matter as claim 8, and is rejected along the same rationale.

**Regarding dependent claim 15**, the claim incorporates substantially similar subject matter as claim 7, and is rejected along the same rationale.

**Regarding dependent claim 16**, the claim incorporates substantially similar subject matter as claim 9, and is rejected along the same rationale.

**Regarding independent claim 17 and dependent claims 18-22**, Church as applied to claims 1-9 and 10-16 above, discloses every aspect of applicant's claimed invention except for not explicitly discloses partitioning of the probability function in the misspelled word and candidate word. However Church discloses the computing probabilities  $P(\text{acress}/\text{actress})$  which is identical to the present invention  $P(\text{string}/\text{word})$ . Therefore the computing probabilities out come of Church and claimed invention are the same.

**Regarding independent claim 23 and dependent claims 24-29**, Church as applied to claims 17-22 above, discloses a probability  $P(\text{acress/actress})$  which is identical to the invention claim's  $P(\text{s/w})$ , and Church not explicitly discloses partitioning the word  $w$ , and  $T$  and computing probabilities for various partitionings, but the out come of the claim invention and the reference are the same computing probabilities  $P(\text{s/w})$ . Therefore the claims incorporates substantially similar subject matter as claims 17-22, and is rejected along the same rationale.

**Regarding independent claim 30 and dependent claims 31-34**, the claims incorporates substantially similar subject matter as claims 17-22, and is rejected along the same rationale.

**Regarding independent claim 40 and dependent claims 41-44**, the claims incorporates substantially similar subject matter as claims 1-5, and is rejected along the same rationale.

**Regarding independent claim 45**, Figure 1 of Church discloses further comprising computer executable instructions that directs a computer to perform, depending upon how likely an expected string was to be incorrectly entered as the entered string, one of the following: leave the entered string unchanged, autocorrect the entered string into the expected string, or offer a list of possible corrections (see column 4 lines 54-61).

**Regarding dependent claims 46-48**, (Column 6 lines 1-42) of Church discloses a computer- readable medium, comprising the program of claim 40.

**Regarding independent claim 49**, Church discloses a program embodied on a computer readable medium, which when executed, directs a computer to perform the following: receive an entered string  $s$  [acress]; for multiple words  $w$  [actress] in a dictionary, determine: (a) how likely a word  $w$  in a dictionary is to have been generated,  $P(w/\text{context})$  (see column 5 lines 1-6, also see column 3 lines 47-48); and (b) how likely the word  $w$  was to have been entered as the string

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s,  $P(s/w)$ , based on at least one edit operation that converts a first character sequence of arbitrary length in the word to a second character sequence of arbitrary length in the string; and maximize  $P(s/w)*P(w/context)$  to identify which of the words is most likely the word intended when the string s was entered (see column 4 lines 42-53).

**Regarding dependent claim 50**, Church discloses the determination is performed for all words in the dictionary (see column 5 line 5).

**Regarding dependent claim 51**, (Figure 1, [16]) of Church discloses further comprising computer executable instructions that directs a computer to either leave the string unchanged, autocorrect the string into the word, or offer a list of possible corrections.

**Regarding dependent claims 52-53**, Church discloses a computer-readable medium, comprising the program of claim 49 (see column 6 line 1).

**Regarding independent claim 54**, Church discloses a spell checker comprising: a source model component to determine how likely a word w in a dictionary is to have been generated (see column 5 lines 1-6); and an error model component to determine how likely the word w was to have been incorrectly entered as the string s based on arbitrary length string-to-string transformations (see column 3 lines 47-58).

**Regarding dependent claim 55**, the claim incorporates substantially similar subject matter as claim 2, and is rejected along the same rationale.

**Regarding dependent claim 56**, the claim incorporates substantially similar subject matter as claim 3, and is rejected along the same rationale.

**Regarding dependent claim 57**, the claim incorporates substantially similar subject matter as claim 4, and is rejected along the same rationale.

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

**Claims 35-39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Potter, U.S. Patent No. 6,131,102 filed (01/15/98). U.S. Patent No. 5,572,423 filed (01/23/95) in view of Church, U.S. Patent No. 5,572,423 filed (01/23/95).**

**Regarding independent claim 35,** Figure 5A of Potter discloses "<wrong, right> training pair and multiple single character edits that convert characters in one of the right or wrong strings to characters in the other of the right or wrong strings at differing costs, an alignment of the wrong string and the right string that results is a least cost to convert the characters (see column 9 lines 46-57);

It is noted that Potter does not explicitly disclose collapsing any contiguous non-match edits into one or more common error regions, each error region containing one or more characters that can be converted to one or more other characters using a substitution edit; and computing a probability for each substitution edit. However refer to Church Table D discloses computing a probability for each substitution edit (see example D-E, table D). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the inventions of Potter and Church in arriving at the instant invention because such combination would facilitate the computing of probability.



**Regarding dependent claim 36**, Figure 4 of Potter discloses the assigning comprises assessing a cost of 0 to all match edits and a cost of 1 to all non-match edits (see column 7 lines 27-31, and lines 54-55).

**Regarding dependent claim 37**, Church discloses the single character edits comprises insertion, deletion, and substitution (see table D).

**Regarding dependent claim 38**, Figure 5A of Potter discloses further comprising collecting multiple <wrong, right> training pairs from online resources.

**Regarding dependent claim 39**, Church discloses further comprising expanding each of the error regions to capture at least one character on at least one side of the error region (see column 5 lines 12-13, and table D).

#### **Prior art**

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Walfish et al.	Patent No. 6,047,300	Date of Patent: May 15, 1997
Armstrong, III	Patent No. 5,671,426	Date of Patent: Jun. 22, 1993
Damerau et al.	Patent No. 5,258,909	Date of Patent: Aug. 31, 1989
Arning	Patent No. 5,715,469	Date of Patent: Jul. 11, 1994
Gilai et al.	Patent No. US 6,256,630 B1	Date of Patent: Jun. 17, 1999

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### Conclusion

7. Any inquiry concerning this communication from the examiner should be directed to Dang Nguyen, who can be reached by telephone at (703) 305-1673. Normal contact times are M-F, 8-4:30.

Upon an unsuccessful attempt to contact the examiner, the examiner's supervisor, Heather Herndon, may be reached at (703) 308-5186.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist, whose telephone number is (703) 305-3900.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks  
Washington, D.C. 20231

Or faxed to:

(703) 746-7239 (for formal communications intended for entry)


or:

(703) 746-7238 (for after-final communications)

Hand-delivered responses should be brought to

Crystal Park II, 2121 Crystal Drive  
Arlington, VA, Fourth Floor (receptionist).

Dang Nguyen 09/18/2003

  
SANJIV SHAH  
PRIMARY EXAMINER